

WHAT IS CLAIMED IS:

1. A router system comprising:
a plurality of virtual routers;
at least one resource shared by the plurality of virtual routers; and
a resource allocator configured to control access to the at least one resource by the plurality of virtual routers.
2. The router system of claim 1 wherein one of the plurality of virtual routers is configured to operate functionally different than at least one other of the plurality of virtual routers.
3. The router system of claim 2 wherein the one virtual router is configured to operate as a backbone router and at least one other of the plurality of virtual routers is configured to operate as a regional router.
4. The router system of claim 1 wherein the router system is a single high-capacity router.
5. The router system of claim 1 wherein each of the plurality of virtual routers is associated with a router profile that is configured to store one or more virtual router attributes.

6. The router system of claim 5 wherein the one or more virtual router attributes include at least one of an identifier, a password, resource access level information, and resource sharing priority information.
7. The router system of claim 6 wherein the one or more virtual router attributes include resource sharing priority information for each of the at least one resource.
8. The router system of claim 5 wherein the resource allocator controls access to the at least one resource based on at least one of the one or more virtual router attributes.
9. The router system of claim 1 wherein the at least one resource includes one or more of a control resource, a data resource, a routing process, and a forwarding process.
10. The router system of claim 1 wherein the at least one resource includes one or more of switching fabric bandwidth and port bandwidth.
11. The router system of claim 1 wherein the at least one resource includes a common memory.

12. The router system of claim 1 further comprising:
a resource-shared information base configured to maintain the at least one resource.
13. The router system of claim 12 wherein the resource-shared information base is further configured to store a plurality of attributes for each of the plurality of virtual routers.
14. The router system of claim 13 wherein the plurality of attributes includes at least two or more of a virtual router identifier, a bandwidth parameter for each interface with which a respective virtual router is associated, a routing table size parameter, a routing table pointer, a forwarding table size parameter, a forwarding table pointer, an internal interface parameter, and an internal interface address.
15. A method for configuring a router system, comprising:
configuring a plurality of virtual routers;
defining at least one resource to be shared by the plurality of virtual routers; and
creating a router profile for each of the plurality of virtual routers.
16. The method of claim 15 wherein the configuring includes:
setting a plurality of attributes for each of the plurality of virtual routers.

17. The method of claim 16 wherein the plurality of attributes include at least two of:
a virtual router identifier, a bandwidth parameter for each interface with which a respective virtual router is associated, a routing table size parameter, a routing table pointer, a forwarding table size parameter, a forwarding table pointer, an internal interface parameter, and an internal interface address.

18. The method of claim 15 wherein the at least one resource includes one or more of a control resource, a data resource, a routing process, and a forwarding process.

19. The method of claim 15 wherein the at least one resource includes one or more of switching fabric bandwidth and port bandwidth.

20. The method of claim 15 wherein the at least one resource includes a common memory.

21. The method of claim 15 wherein the router profile includes at least one of a user identifier, a user password, resource access level information, and resource sharing priority information.

22. The method of claim 21 wherein the router profile includes resource sharing priority information for each of the at least one resource.

23. In a router system, a method for controlling allocation of a group of shared resources by a plurality of virtual routers, the method comprising:

- receiving a request for allocation of one of the shared resources from at least one of the plurality of virtual routers, the request including security information;
- determining whether the request is authentic based on the security information; and
- granting the request when the request is authentic.

24. The method of claim 23 wherein the router system includes a resource-shared information base that is configured to store resource allocation information for each of the plurality of virtual routers, and

wherein the method further comprises:

- updating the resource-shared information base based on the granting.

25. The method of claim 23 wherein the request further includes priority information, and

wherein the method further comprises:

- determining whether to grant the request based on the priority information.

26. The method of claim 25 wherein the priority information relates to the one shared resource.

27. A router system comprising:

a plurality of virtual routers configured to share at least one resource, each of the plurality of virtual routers being associated with a router profile that defines a security level and resource sharing priority for the virtual router;

a resource-shared information base configured to maintain the at least one resource; and

a resource allocator configured to receive a request for access to the at least one resource and grant access to the at least one resource to one of the plurality of virtual routers based on the profile of the one virtual router.

28. The router system of claim 27 wherein the resource-shared information base is further configured to:

store a plurality of attributes for each of the plurality of virtual routers.

29. The router system of claim 28 wherein the plurality of attributes includes at least two of:

a virtual router identifier, a bandwidth parameter for each interface with which a respective virtual router is associated, a routing table size parameter, a routing table pointer, a forwarding table size parameter, a forwarding table pointer, an internal interface parameter, and an internal interface address.